

REMARKS

Claims 1-5, 7-18 and 20 are pending. By the Office Action, claim 13 is objected to; claims 6-8, 10, 12-14, and 16-20 are rejected under 35 U.S.C. §112; claims 1-3, 11, 14-15, and 17 are rejected under 35 U.S.C. §102; and claims 4-10, 12-13, 16, and 18-20 are rejected under 35 U.S.C. §103. By this Amendment, claims 1, 7-8, 12-14, 18 and 20 are amended and claims 6 and 19 are canceled.

Claims 8, 12 and 18 are amended to correct antecedent basis issues without altering the scope of the claims. Claim 13 is amended to place the claim into independent form, and to correct formal matters without altering the scope of the claim. Claims 1 and 14 are amended to incorporate the subject matter of dependent claims 6 and 19, respectively. No new matter is added.

I. Claim Objection

Claim 13 is objected to based on an asserted informality. By this Amendment, claim 13 is amended to correct the spelling of "vapor." Reconsideration and withdrawal of the objection are respectfully requested.

II. Rejections Under §112

A. Claims 10 and 14

Claims 10 [sic, 1] and 14 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Office Action argues that the phrase "under the form of particles" is unclear. By this Amendment, the phrase is amended to clarify that it means that the polymer absorbent is in particulate form. Reconsideration and withdrawal of the rejection are respectfully requested.

B. Claims 6-7 and 19-20

Claims 6-7 and 19-20 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Office Action argues that the excess amount defined in these claims is unclear. Applicants respectfully traverse this rejection.

Claims 6 and 19, the subject matter of which has been incorporated into claims 1 and 14, specify that "the amount of polymer particles enclosed in the bag is in excess compared to that which would be just required to fill up the bag when they are in the full swollen state." Claims 7 and 20 then further limit this amount, by specifying that "said excess is from 5 to 10 percent by weight of the theoretical weight required to just fill the bag completely."

These limitations indicate that the bag contains an amount of polymer particles, which is higher than the amount that would be required to completely fill the bag when the polymer particles are in the full swollen state. Thus, in the claimed invention, the bag contains a sufficient amount of particles such that the volume limitation of the bag will constrain all of the particles from achieving the full swollen state, because there is insufficient room in the bag to allow all of the particles to achieve the full swollen state. Claims 7 and 20 then quantify this excess amount in terms of a percentage of the theoretical weight (or theoretical number of polymer particles) required to just fill the bag completely.

By way of example only, and without limitation on the claimed invention, it may help to assume the following: If the bag could hold 100 polymer particles in their fully swollen state, then claims 6 and 19 would require that the bag contain in excess of 100 polymer particles. Claims 7 and 20 would require that the bag contain from 105 to 110 polymer particles.

Accordingly, Applicants respectfully submit that the claims clearly define the claimed invention, and would not be considered indefinite to one of ordinary skill in the art.

Reconsideration and withdrawal of the rejection are respectfully requested.

C. Claims 16 and 17

Claims 16 and 17 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Office Action argues that the terms "longer" and "shorter" are relative terms that are indefinite. Applicants respectfully traverse this rejection.

Claim 14, from which claims 16 and 17 depend, specifies an article with cooling capability by water desorption from a water-swollen gel, comprising a polymer absorbent enclosed within a bag delimited by a collapsible envelope having non-watertight walls and made of a non-woven fabric comprising longer threads or fibers of natural or semi-synthetic nature and shorter polyester fibers, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences more active in retaining absorbed water and a shell of more cross-linked polymer sequences apt to retard diffusion of water from a particle to another during desorption of absorbed water, and wherein said polymer absorbent has a sodium polyacrylate base, wherein the amount of polymer particles enclosed in the bag is in excess compared to that which would be just required to fill up the bag when they are in the full swollen state. Claims 16 and 17 then further define the specific nature of the longer and shorter fibers.

Applicants respectfully submit that the claims are not indefinite. Although claims 16 and 17 refer to "longer" and "shorter" fibers, which terms may be relative, it is clear from claim 14 that the terms are relative to each other, and not to some unspecified standard. The claims together thus indicate that the material includes two types of fibers, where the longer of the two fibers is of natural or semi-synthetic nature (claim 14) or viscose fibers (claim 16), and that the shorter of the two fibers are polyester fibers (claim 14) or polypropylene fibers (claim 17).

Accordingly, Applicants respectfully submit that the claims clearly define the claimed invention, and would not be considered indefinite to one of ordinary skill in the art.

Reconsideration and withdrawal of the rejection are respectfully requested.

D. Claims 8, 12 and 18

Claims 8, 12 and 18 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The claims are rejected because "the composition" lacks antecedent basis, and because "semi-synthetic" is allegedly unclear. By this Amendment, claims 8, 12 and 18 are amended to clarify that the composition is the non-woven fabric. Applicants respectfully traverse the remainder of the rejection.

Applicants respectfully submit that in the art, the term "semi-synthetic" is a well known term of art, and would not be considered indefinite. One of ordinary skill in the art would understand that such fibers can generally be in three forms, i.e., natural, synthetic, or semi-synthetic. Furthermore, the specification specifically describes the semi-synthetic fibers, for example, to preferably be of a cellulosic material, which describes such fibers as known in the art.

Accordingly, Applicants respectfully submit that the claims clearly define the claimed invention, and would not be considered indefinite to one of ordinary skill in the art.

Reconsideration and withdrawal of the rejection are respectfully requested.

E. Claim 13

Claim 13 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The claim is rejected because "the body" lacks antecedent basis. By this Amendment, claim 13 is amended to clarify that the body is the "individuals' body" specified in the preamble of the claim.

Accordingly, Applicants respectfully submit that the claim clearly defines the claimed invention, and would not be considered indefinite to one of ordinary skill in the art.

Reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejection Under §102

Claims 1-3, 11, 14-15, and 17 are rejected under 35 U.S.C. §102(b) over Goldman.

Applicants respectfully traverse this rejection.

By this Amendment, claims 1 and 14 are amended to incorporate the subject matter of non-rejected claims 6 and 19, respectively. Accordingly, the rejection is overcome and must be withdrawn. Reconsideration and withdrawal of the rejection are respectfully requested.

IV. Rejection Under §103

A. Goldman and Bahia

Claims 4-10, 12-13, 16, and 18-20 are rejected under 35 U.S.C. §103(a) over Goldman in view of Bahia. Applicants respectfully traverse this rejection. The rejection as it pertains to claim 13 is addressed below, in the rejection over Goldman, Bahia and Graham.

Independent claim 1 is directed to an article with cooling capability by water desorption from a water-swollen gel, comprising a polymer absorbent enclosed within a bag delimited by a collapsible envelope having non-watertight walls, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences more active in retaining absorbed water and a shell of more cross-linked polymer sequences apt to retard diffusion of water from a particle to another during desorption of absorbed water, wherein the amount of polymer particles enclosed in the bag is in excess compared to that which would be just required to fill up the bag when they are in the full swollen state. Independent claim 14 is directed to an article with cooling capability by water desorption from a water-swollen gel, comprising a polymer absorbent enclosed within a bag delimited by a collapsible envelope having non-watertight walls and made of a

non-woven fabric comprising longer threads or fibers of natural or semi-synthetic nature and shorter polyester fibers, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences more active in retaining absorbed water and a shell of more cross-linked polymer sequences apt to retard diffusion of water from a particle to another during desorption of absorbed water, and wherein said polymer absorbent has a sodium polyacrylate base, wherein the amount of polymer particles enclosed in the bag is in excess compared to that which would be just required to fill up the bag when they are in the full swollen state. Such cooling articles are nowhere taught or suggested by the cited references.

In contrast to the claimed invention, Goldman is directed to an absorbent member useful in the containment of body fluids such as urine, The absorbent member has at least one region containing hydrogel-forming absorbent polymer in a concentration of from about 60 to 100% by weight and providing a gel-continuous fluid transportation zone when in a swollen state. This hydrogel-forming absorbent polymer has: (a) a Saline Flow Conductivity (SFC) value of at least about $30 \times 10^{-7} \text{ cm}^3 \text{ sec/g}$; (b) a Performance under Pressure (PUP) capacity value of at least about 23 g/g under a confining pressure of 0.7 psi (5 kPa); and (c) a basis weight of at least about 10 gsm. The region where this hydrogel-forming absorbent polymer is present has, even when subjected to normal use conditions, sufficient wet integrity such that the gel-continuous zone substantially maintains its ability to acquire and transport body fluids through the gel-continuous zone. See Goldman at Abstract. Bahia is cited for its disclosure of the use of a viscose fiber in a wound dressing. See Bahia at col. 3, lines 40-43.

However, neither Goldman nor Bahia teach or suggest the limitation in claims 1 and 14 that the amount of polymer particles enclosed in the bag is in excess compared to that which would be just required to fill up the bag when they are in the full swollen state. As described above, this limitation indicates that the bag contains a sufficient amount of particles

such that the volume limitation of the bag will constrain all of the particles from achieving the full swollen state, because there is insufficient room in the bag to allow all of the particles to achieve the full swollen state. As a result, when the article is wetted with water, the particles absorb water and swell. However, because of the excess amount of polymer particles, and of the restricted internal volume of the envelope (or bag), some of the polymer particles cannot swell completely. When the internal volume of the envelope is completely occupied by swelled particles, there remains some particles that are not fully swollen. These non-fully-swollen particles are generally located next to the envelope walls, and are capable of absorbing trace amounts of liquid, such as water, moisture or sweat, penetrating into the bag through the envelope. The results is an improved article for keeping the envelope dry.

The Office Action has not established a *prima facie* case of obviousness. The requirements for a prima facie case of obviousness are specified and described in MPEP §2143. According to MPEP §2143, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference. Second, there must be a reasonable expectation of success. Third, the prior art reference must teach or suggest all the claim limitations. The references applied in the Office Action fail to teach or suggest all the claim limitations, or to provide any reasonable expectation of success.

Goldman and Bahia fail to teach or suggest at least the limitation regarding the excess amount of polymer particles. Nor do the references teach or suggest any reason to modify the disclosed articles to provide such an excess of polymer particles. For these reasons alone, the claimed invention would not have been obvious over the cited references.

Furthermore, Applicants submit that one of ordinary skill in the art would not have been motivated to provide the claimed invention based on the cited references. In Goldman and Bahia, the purpose of the contained particles is to swell and retain liquid. However, providing an excess of polymer particles would appear to run counter to the objectives of the references,

since the excess of particles would be expected to retain less liquid, or at least to retain the liquid less efficiently. Accordingly, one of ordinary skill in the art based on the cited references would not have modified the disclosures thereof to include the claimed excess of polymer particles, with any expectation of success.

Accordingly, the claimed invention of claims 1 and 14 would not have been obvious over Goldman in view of Bahia. The remaining claims depend from claims 1 or 14, and are patentable for at least the same reasons as claims 1 and 14. Reconsideration and withdrawal of the rejection are respectfully requested.

B. Goldman, Bahia and Graham

Claim 13 is rejected under 35 U.S.C. §103(a) over Goldman in view of Bahia or Graham. Applicants respectfully traverse this rejection.

Independent claim 13 is directed to a method for relieving pain from a sore part of an individual's body with a cooling article comprising a polymer absorbent enclosed within a bag delimited by a collapsible envelope having non-watertight walls, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences more active in retaining absorbed water and a shell of more cross-linked polymer sequences apt to retard diffusion of water from a particle to another during desorption of absorbed water, said method comprising: wetting said polymer particles with water through said envelope during a sufficient time to swell them into a gel mass filling up said bag, and applying said article on said sore part of the individual's body maintaining an inner wall in close contact thereon while allowing water vapor desorbed from said particles to escape through an opposed outer wall of said envelope. Such a method is also not taught or suggested by the cited references.

Goldman and Bahia are discussed above. Graham is cited for its disclosure of a method for treating a patient involving applying an article to a patient's body. See Graham at

claim 2. However, any combination of Goldman, Bahia and Graham would not have provided the invention of independent claim 13.

The present invention is based in part on the discovery that the specific core-shell structure of the polymer particles confer unexpectedly improved properties to the article. In particular, the polymer particles confer to the article in which they are contained, after it is wetted with water, a high and long-lasting cooling capability when it is applied to the skin. The claimed invention provides a high thermal inertia and low heat losses, presumably because the highly cross-linked outer layer of the particles only allow water in the form of vapor to escape from the particle cores, and by slowing water circulation from one particle to another.

None of the cited references teach or suggest the claimed particle structure, or the benefits provided thereby. Goldman discloses an absorbent member having at least one region containing hydrogel-forming absorbent polymer. See Goldman at Abstract. Bahia discloses a wound dressing made of absorbent fibers, which is intended to be applied on a wound to absorb fluids. Graham discloses an envelope containing a particulate water insoluble hydrogel, which can be used to absorb water present in the atmosphere, or to administer sustained release compositions to an animal or human. The polymer particles of Graham do not have a core-shell structure.

The wound dressing of Bahia and the article of Graham are thus not intended to be first wetted with water. Wetting the articles with water would appear to be contrary to the objectives of absorbing water (in Bahia or Graham). One of ordinary skill in the art would have understood that first wetting the article prior to application to the patient, would result in decreased future absorption by the article without providing any initial benefits.

Likewise, one of ordinary skill in the art would not have been motivated to use the claimed core-shell polymer particles in the article of Graham, where the article is intended to

provide sustained release of the contained compositions to an animal or human. Use of such particles, which would provide a barrier to liquid transport, would destroy the very purpose of the article of Goldman.

Accordingly, Applicants submit that the cited references do not teach or suggest the claimed invention, either alone or in combination. The references do not teach or suggest all of the claim limitations, and do not provide any motivation for one of ordinary skill in the art to have combined the references in the manner asserted in the Office Action.

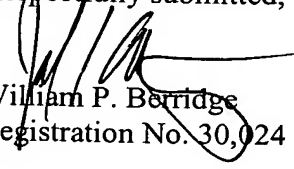
Accordingly, the claimed invention of claim 13 would not have been obvious over Goldman in view of Bahia or Graham. Reconsideration and withdrawal of the rejection are respectfully requested.

V. Conclusion

In view of the above amendments and remarks, it is respectfully submitted that the above-identified patent application is in condition for allowance. Favorable consideration and prompt allowance are therefore respectfully requested.

Should the Examiner believe anything further would be necessary in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,


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